

REMARKS

The Examiner is requested to reconsider his rejection of Claims 1-3, 5, 7, 12 & 13 as being clearly anticipated by Falletti (US 4,865,742).

Contrary to the Examiner's inference, Falletti teaches "a method of treatment by tangential filtration enabling pollutants to be removed without destroying the emulsion or the microemulsion of oil in water, in other words enabling said emulsion to be regenerated." (Column 2 lines 11-16), which is diametrically opposed to the present invention, which is directed to the separation of water from a water/oil mix.

Falletti follows the traditional filtration approach of using large, multi-bundles of sintered filter elements (see her Figures 1 & 2). In contrast, the module of the subject application comprises a single ceramic filter element located in a close-fitting filter housing (see Figures 1 and 1A, Page 3, 2nd paragraph of the disclosure) with a very close-tolerance radial clearance between the stainless steel housing wall and the outer surface of the ceramic element, serving as the permeate drainage space, and which space is filled with cleaning liquids when carrying out the essential function of back-flushing, in order to maintain a high flux rate in the filtering process.

The significance of this minimized permeate collection space is that the space also receives, and is filled with the chemical cleaning solution/solutions, used during the subject back pulse chemical cleaning regimes. The subject apparatus and its cycles have proven their commercial viability in-part because of the minimization of volumes of cleaning solutions required, which permits the economic employment of frequent cleaning cycles, so as to maintain high filtration flux rates.

In addition, the minimized volumes of cleaning fluids required also enables rapid temperature rises in the circulation-heated cleaning liquid, with consequent short cleaning time requirements, thus optimizing the on-line utilization factor for the system.

The very geometry of Falletti's filter module (see her Figures 1 and 2) absolutely militate against minimized volumes of permeate collection space, for effective use with cleaning solutions by way of pulsed back-washing.

The Examiner is respectfully requested to reconsider his rejection of Claims 4 and 9, based upon the inferences that one skilled in the art would reasonably be expected to draw from the cited references. Without any reference whatsoever being made to the teachings of the cited reference that might lead one skilled in the art to reasonably draw such an inference, it appears that this rejection is based solely upon hindsight, rather than upon reasonable inferences that can be drawn from the teachings of the reference.

It is respectfully suggested that such an inference of "reasonable deductions by one skilled in the art" are a denial of the very significant technical contribution of the present inventor, as evidenced in the present Declaration.

Reconsideration of the rejection of Claim 3 as unpatentable over Falletti in view of Haney is requested.

Haney relies upon membrane filtration, where molecule follows molecule through the pores of his nano-filtration membrane. The Haney membrane also is entirely susceptible to fouling, and its manner of commercial use is to discard the fouled membrane, and substitute a new membrane. The rates of filtration by a Haney membrane are such that its practical use as a substitute for the present invention would be ludicrous. Furthermore, Haney, at Column 13, lines 6-8 clearly disclaims any need for chemical treatment of his

membrane separator. The backflush provisions of Haney appear to be entirely limited to use with water, functioning solely as an hydraulic force to displace fouling particles. This factor is discussed at some length in the accompanying Declaration by the present inventor.

. In contrast to Haney, the ultra-filtration (of the present invention) is a flow of oil-contaminated liquid water across a membrane whose pore size allows the flow of water. It would be economically totally unviable in a real life situation to use reverse osmosis membranes in the treatment of oil contaminated waters. Such polymeric membranes foul readily and irreversibly in such situations. They cannot generally be recovered to reasonable flux levels even when using the techniques as described in the subject application. At the heart of Haney's invention is a complex series of valves and orifices apparently useful in achieving certain efficiencies in reverse osmosis. Furthermore, Haney uses a traditional spiral wound reverse osmosis membrane. These membranes are totally inappropriate to oil/water separation technology. Haney's first statement under "Field of the Invention" states that the "invention relates to water treatment systems of the type utilizing reverse osmosis and/or nano-filtration thin film membrane separation technology". Immediately after that statement Haney talks about the various technologies in use that his invention replaces. Of the contaminants removed that he refers to, nowhere is oil or petroleum products referred to.

Thus, besides being totally impractical, the Falletti/Haney combination suggested by the Examiner, besides being essentially incompatible and inoperable, would lead one skilled in the art away from the present invention

The essence of the present invention is oscillatory backwashing or back pulsing one of

a variety of hot cleaning solutions in a back wash manner through a ceramic filter module.

The present invention provides apparatus by means of which an effective cleaning of the membrane is achieved. The various cleaning chemicals are heated by way of circulation and used to effect an efficient solvent action on the various contaminants that are fouling the membrane pores or membrane surface. These solvents loosen the bonds that the contaminants make with the membrane pore walls. Once dissolved, and under back-pressure, these loosened contaminants are then blown off the membrane by back-pressure pulses.

The combined references fail to teach the means necessary to effectively administer a chemical backflush selected from a plurality of individual cleaning solution tanks.

In combining Falletti with Trulson (US 3,977,967) it is respectfully suggested that the Examiner is reaching a conclusion of obviousness that is not reasonably supported by the facts. The conclusion of equivalence because of Trulson providing "a compact, close proximity design" ignores the difficulties overcome by the present invention, while denying the expertise of the present inventor, who is dealing with a revolutionary approach to oil/water separation, as born out by the significant up-grading capability of one of his installations. It further denies the inventor the legal recognition of a meritorious invention that is making several significant environmental contributions to society, as testified to in the present Declaration.

It is noted that the cited Kiderman et al pending Application (US 20030132175) was filed Dec 6, 2002, whereas the Applicant's No.10/050,712 was filed Jan 18, 2002, for substantially the same subject matter, with Kiderman et al having "differences that one

skilled in the art would reasonably be expected to draw therefrom”.

Consideration of the amended claims with a view to allowance, in light of the inventor's Declaration and the foregoing remarks, is respectfully requested.

Respectfully submitted,

Douglas W.EGGINS Patent Agent Regn.No.21,175